SOCIETIES AND ACADEMIES

LONDON

Linnean Society, June 17.—Dr. G. J. Allman, F.R.S., president, in the chair.—Mr. J. E. Howard, F.R.S., made some observations on *Cinchona anglica*, a hybrid between *C. Calisaya* and *C. succirubra*.—Dr. Pryor exhibited specimens of *Myrsine Urvillei*, from New Zealand, which appeared to be hardy in this country.—The following papers were read:—1. On the affinities and febrifuge properties of the Aristolochiaceæ, by Mr. Clark.—2. On *Whitfieldia*, by Mr. S. Moore.—3. On the anatomy of *Amphioxus*, by Prof. E. R. Lankester, F.R.S. The author described the anatomy of *A. lanceolatus* as worked out in a series of sections made from numerous specimens collected by him at Naples. In opposition to Stieda, the truly perforate structure of the pharynx was asserted. A true body cavity or cœlom, distinct from the atrial chamber, was described, and it was shown to expand and attain a large development in the post-atrioporal region of the body. A pair of pigmented canals were described, apparently representing the vertebrate renal organ in a degenerate or else a rudimentary condition. Johannes Müller's pores of the lateral canals were shown to be hyoid slits leading into the pharynx. The attachment of the pharyngeal bars to the wall of the atrium by a series of pharyngo-pleural septa was minutely described. It was further shown that the marginal ridges of the ventral surface (metapleura) are hollow, containing a lymph-space, and that they, as well as the plates of the ventral integuments, disappear when the atrial chamber is largely distended with the sexual products. Drawings by Mr. W. J. Fanning, of Exeter College, were exhibited in illustration of the above statements.

Physical Society, June 26.—Prof. G. C. Foster, vice-president, in the chair.—Mr. W. J. Wilson read a paper on a method of measuring electrical resistance of liquids. Great difficulty has hitherto been experienced in measuring the resistance of electrolytes on account of the polarisation of the electrodes, and most of the methods hitherto employed have aimed at reducing this to a minimum by using large electrodes and very weak or rapidly alternating currents. The determinations, however, are difficult and require to be quickly performed. The following method is easy and is free from both the above objections. The arrangement in its most simple form consists of a long narrow trough filled with the liquid to be measured, say dilute acid. A porous pot containing a zinc plate in sulphate of zinc being placed in the acid at one end of the trough, and a similar pot with a copper plate in sulphate of copper in the acid at the other end, the whole arrangement forms a sort of elongated Daniell's cell, the chief resistance of which is in the long column of acid. The circuit between the plates being completed through a resistance box and mirror galvanometer, the current is shunted until a suitable deflection is obtained. One of the porous pots is now moved along the trough towards the other, and, as the resistance of the circuit is thus reduced by shortening the column of acid, the galvanometer deflection largely increases. The external resistance is now increased by means of the box, until the deflection is reduced to the same point as at first. This resistance put into the circuit is evidently equal to that of the liquid taken out, and thus a measure of the liquid resistance is obtained. Two forms of apparatus were shown. In one, the vessels containing sulphate of zinc and sulphate of copper respectively, formed pistons in a glass tube which contained the liquid to be examined. In the other, two pairs of concentric vessels were connected by a bent glass tube which contained the liquid under examination. The method is applicable to a great variety of liquids, and with care almost any degree of accuracy may be obtained. The chief obstacle to exact measurements lies in the fact that the resistance of liquids is greatly affected by temperature, but this difficulty is, of course, common to all methods. Mr. Wilson has been experimenting with brine, and gave some of the results obtained, but he has not as yet made a sufficient number of experiments to complete a table. A mode of arranging the apparatus in a differential or bridge form was also described, but it has not been found necessary to use it; the simple circuit arrangement giving accurate results with less trouble. Prof. Foster asked whether experiments had been made in order to compare this method with Wheatstone's, which differed from Mr. Wilson's, as *liquid* electrodes were not used. He then described an arrangement he had adopted for measuring the polarisation of plates in a voltameter. Prof. M'Leod stated that he had used plates of amalgamated zinc and reversed currents to overcome polarisation. He found that some salts, chloride of zinc for instance, had points of maximum conductivity which corresponded to a definite degree of concentration. Prof. Guthrie considered the research to be interesting as showing that points of minimum resistance might coincide with points of definite hydration of the salts.—Mr. Wilson, replying to Prof. Foster, stated tha tthe chief objection to the use of metal plates is not a variation of the electromotive force of polarisation, but the accumulation of bubbles of gas on the metallic surfaces.—Dr. Stone made a communication on the subjective phenomena of taste. He stated that some experiments he had recently made led him to consider whether there might be "complementary taste," just as there is "complementary sight." He described the following experiments as examples of the kind of phenomenon. If water be placed in the mouth after the back of the tongue has been moistened with moderately dilute nitric acid, the water will have a distinctly saccharine taste. Or if the wires from a 10-cell Grove's battery be covered with moist sponge, and placed one on the forehead and the other at the back of the neck, an impression is produced which is exactly similar to that resulting from the insertion of the tongue between a silver and a copper coin, the edges of which are in contact. Dr. Stone showed that the induced current usually employed for medical purposes has not this effect, and he considered the results curious, as, so far as we know, they can hardly be the result of chemical action. Mr. Roberts mentioned an instance in which sudden alarm had been followed by the peculiar taste which results from the introduction of two coins into the mouth, to which allusion had already been made.—Prof. Foster thanked Dr. Stone in the name of the Society, and expressed a hope that he would continue his suggestive and important experiments.—Four other communications were made, of which abstracts will be given in a future number.

Entomological Society, June 7.—Sir Sidney S. Saunders, C.M.G., president, in the chair.—Mr. Briggs exhibited some bred specimens of *Zygæna meliloti*, bearing a strong resemblance to *Z. trifolii*, and mentioned several instances in which the offspring of *Z. meliloti* exhibited a taint of *trifolii* blood, and suggesting that *Z. meliloti* might be only a stunted variety.—Mr. M'Lachlan exhibited a portion of a vine-leaf on which were galls of *Phylloxera vastatrix*, the leaf having been plucked in a greenhouse near London.—The Rev. A. E. Eaton exhibited the insects which he had recently captured in Kerguelen's Island. There were about a dozen species belonging to the *Coleoptera*, *Lepidoptera*, and *Diptera*, besides some specimens of bird-lice and fleas. They were all either apterous or the wings were more or less rudimentary. One of the *Diptera* possessed neither wings nor *halteres*.—Mr. Briggs exhibited a specimen of *Halias prasinana*, which, when taken, was heard to squeak several times distinctly, and at the same time a slender filament projected from beneath the abdomen was observed to be in rapid motion, and two small spiracles close to the filament were distinctly dilated.—The President called attention to a larva which he had recently discovered at Reigate in the body of a stylopised female of *Andrena trimmerana*, the larva having a long telescopic process at the anterior extremity, and two reniform processes behind, similar to *Conops*, an insect which had frequently been reared from *Pompilus*, *Sphex*, and *Odynerus*, and had also been met with in *Bombus*, although he had never before heard of its being found in *Andrena*.—The Secretary exhibited some specimens of a minute *Podura* forwarded to him by the Secretary of the Royal Microscopical Society, having been found on the snow of the Sierra Nevada in California.—Mr. F. H. Ward exhibited some microscopic slides showing specimens of a flea attached to the skin of the neck of a fowl.—Prof. Westwood communicated a description of a new genus of Clerideous Coleoptera from the Malay Archipelago.—Mr. M'Lachlan read a paper entitled "A sketch of our present knowledge of the Neuropterous Fauna of Japan (excluding the *Odonata* and *Trichoptera*)."

BERLIN

German Chemical Society, June 14.—A. W. Hofmann, president, in the chair.—The President opened the proceedings by informing the Society that their veteran honorary member, Prof. Wöhler, had very kindly written some recollections of his life for the special purpose of being read to the meeting; refusing, however, their publication in the Proceedings of the Society. The following short extracts of these "recollections of an old chemist" will give some idea of the interest attending the MS. read by the President. On the 2nd of September, 1823, Dr. Wöhler had finished his medical studies at Heidelberg, and, yielding to the advice of L. Gmelin, he abandoned the plan

of practising medicine, took up chemistry as the aim of his life, and repaired to Stockholm as a pupil of Berzelius. Choosing the route from Lübeck by sea, he was obliged to wait six weeks for the departure of a boat. The tedious stay in that harbour was shortened through the acquaintance of a mineral dealer already known to Wöhler from the Frankfort fair, where he had exchanged hyaliths for other minerals, and where Wöhler had met Goethe bent upon a similar errand. He also made the acquaintance of a pharmaceutical chemist, Mr. Kind, at Lübeck, and with him prepared potassium in quantities hitherto unknown in Germany, and which, later on, Berzelius made use of in his studies of boron and silicium. Arriving after a stormy passage, he managed to find his way, by the aid of a Swedish student, with whom he had to talk Latin, the only language they had in common. He trembled almost at the first interview with the celebrated chemist, but was soon put at ease by his genial manner. Berzelius's laboratory was of the simplest. It consisted of two bare rooms and of a kitchen, which served at the same time for cooking the meals of the bachelor-household. This was the time when Berzelius had just adopted the chlorine theory. An old maiden cook who reigned supreme at the hearth complaining one day of the smell of "oxidised muriatic acid," Berzelius exclaimed, smiling, "There is no longer any oxymuriatic acid, Anna; you must say it smells very badly of chlorine." To try his pupil's patience, he put him to the analysis of lievriete, demanding great exactness. When the analysis did not come up to the mark, he said: "Doctor, that was quick, but bad." But soon he took the greatest interest in his pupil's researches on cyanic acid, for which the ferrocyanide of potassium had to be sent for from Lübeck. Berzelius kept his simplicity in his intercourse with the courtiers who sometimes visited the laboratory, and for whom some interesting experiments had to be performed. He was an excellent narrator, and Wöhler listened with the greatest interest to his recollections of Gay Lussac and of Sir Humphry Davy. Wöhler passed a very busy winter, spending his evenings in translating Berzelius' annual reports and Hisinger's treatise on mineralogy. When the spring came he enjoyed walks in the beautiful neighbourhood of Stockholm, studded with the last oaks of the northern zone, and he became intimately acquainted with the Swedish philosophers Caro, Mosander, Retzius, Arfvedson, Hisinger, and others who have now all left the scene of life. At last the time arrived when he had to take his departure from Sweden, and he did so, accompanied by Berzelius himself, who had invited him to take a journey through Sweden and Norway. Many mineral treasures were collected on the road, and the great mines and industrial establishments were visited. At Helsingborg the travellers stopped for several days to wait for the arrival of Brogniart, father and son, the French geologists, and of Sir Humphry Davy. The latter was then salmon-fishing in Norway, and announced his arrival to Berzelius in a letter commencing, "My dear sir and very honoured brother in science." He had some kind and encouraging words for young Wöhler, not forgotten by the latter in his celebrity and his old age. Sir Humphry soon left for Copenhagen, where he had an engagement to shoot snipe with Forchhammer. Oerstedt arrived also to pay Berzelius his respects, and so did several professors from the neighbouring university of Lund. In fact, Berzelius's celebrity was so great that an official in the passport office refused to take any fee from the pupil who had come to study under such a master. Messrs. Brogniart had taken their comfortable travelling carriage over from Paris. Their comfort, however, was disturbed by the arrival of a French courier, the bearer, as they feared, of news of Louis XVIII.'s death. Putting the question to the courier, they received the answer, "Messieurs, vous savez, qu'un courier doit être aveugle, sourd et muet." The journey to Norway was continued in common, the elder Brogniart and Berzelius occupying the carriage of the former, Wöhler and the younger Brogniart following in Berzelius's carriage. They often had to stop all night in their carriages; for it so happened that the Crown Prince preceded them on their road with a numerous suite, and the inns were overcrowded. We cannot enter into the details of this interesting journey. When it came to a close at Helsingborg, Wöhler had to take leave of his master, and the feelings of regret were mutual and deep. Translating Berzelius's reports and his handbooks became henceforth a duty to Wöhler, by which, regardless of the time it demanded, he tried to repay a debt of gratitude. The meeting sent a vote of thanks to the great and modest author of these recollections, praying for his permission to print them in the Society's Reports; and your correspondent hopes he may be forgiven any indiscretion he has been guilty of in preserving for the scientific world these short extracts.

—Th. Zoeller and E. A. Grothe have introduced xanthogenate of sodium as a remedy for Phylloxera. Compared with the sulfocarbonate of sodium, it deserves the preference. $CS\begin{matrix}SNa\\SNa\end{matrix}$ is easily transferred into CS_2 and HS_2, the former killing the Phylloxera, while the latter gas injures the vine; but xanthogenate of sodium, $CS\begin{matrix}SC_2H_5\\ONa\end{matrix}$, cannot produce hydrosulphuric acid, and appears to be by far the better remedy of the two, as well as the cheaper one.—S. Reymann proposes the following way of determining the amount of orcine contained in lichens. Bromine-water of known strength is added to the solution, producing tribromorcine, $C_7H_5Br_3O_2$, until the solution has a permanent smell of bromine. Iodide of potassium is then added, and the amount of iodine set free (corresponding to the excess of bromine added) is determined by volumetric analysis.—The same chemist described an easy method of determining the quantity of bromoform contained in commercial bromine.—E. Donath described a method of extracting from yeast a substance inverting cane-sugar, and called by him invertine.—E. Zuercher has found bromonitroæthan to be transformed by nitrite of potassium and alcoholic potash into yellow needles of potassic dinitroæthan:

$$\begin{matrix}CH_3\\|\\CH(NO_2)Br\end{matrix} + KNO_2 + KOH = \begin{matrix}CH_3\\|\\CH(NO_2)_2K\end{matrix} + KBr + H_2O.$$

The substance resembles the corresponding picrate. The acid is an oily liquid.—E. Forst and Th. Zincke have oxidised the two isomeric glycols, hydrobenzoine and isohydrobenzoine, $C_{14}H_{12}(OH)_2$. Both yield benzoic aldehyde. The authors try to explain the identity of these reactions by constitutional formulæ.—F. Tieftrunk exhibited specimens of gas-tight membranes, invented by Mr. Schülke, and used for a new system of dry-meters by Mr. S. Elster in Berlin. The membranes are not acted upon by hydrocarbons, sulphuret of carbon, or ammonia, and form a much better material for dry-meters than leather. Mr. Tieftrunk demonstrated another application of this invention, consisting in a gas-burner yielding a constant flame. An air-bath heated with this burner did not vary in temperature more than one degree during six hours.

BOOKS AND PAMPHLETS RECEIVED

BRITISH.—Differential and Integral Calculus: C. P. Buckingham (Trübner and Co.)—Italian Alps: Douglas A. Freshfield (Longmans).—An Analysis of the Life Form in Art: Dr. Harrison Allen (Trübner and Co.)—Nuragghi Sardi and other non-historic Stone Structures of the Mediterranean Basin: Capt. S. Pasfield Oliver, R.A., F.S.A., F.R.G.S. (Dublin, Carson Bros.)—Proceedings of the Royal Society of Edinburgh, 1874-75.

CONTENTS